Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1. (currently amended) In ~~A~~ a method for producing a Pb doped Bi-2223 superconductor including multiple heating steps, the improvement comprising reducing the concentration of non-superconducting phases during the initial heat treatment of Pb doped Ag/Bi-2223 composites having Bi-2223 and Bi-2212 superconducting phases by, ~~comprising~~ providing a Pb doped Ag/Bi-2223 composite having Bi-2223 and Bi-2212 superconducting phases, heating the composite in an atmosphere having an oxygen partial pressure not less than about 0.04 atmospheres, ~~and~~ maintaining the temperature at the lower of a non-superconducting phase take-off temperature and the Bi-2223 superconducting phase grain growth take-off temperature, ~~and~~ varying the oxygen partial pressure and/or the temperature between about 815°C and about 835°C to produce not less than about 80 percent conversion to Pb doped Bi-2223 superconducting phase and not greater than about 20 volume percent non-superconducting phases, and thereafter continuing treatment of the superconducting material to produce a final product.

Claim 2 (currently amended) The method of claim 1, wherein the oxygen partial pressure is varied between about 0.04 and about 0.21 atmospheres during the initial heating step.

Claim 3 (currently amended) The method of claim 1, wherein the composites are initially heated up to a temperature of about 825°C with the rate of temperature

increase between about 700°C and about 825° being about 10°C/minute.

Claim 4 (currently amended) The method of claim 3, wherein the composite is initially heated to about 825°C and is held at an oxygen partial pressure of about 0.075 atmosphere and maintained thereat for not more than about 300 minutes.

Claim 5 (currently amended) The method of claim ~~4~~ 1, wherein the composite is initially heated to a temperature of about 835°C and is held at an oxygen partial pressure of about 0.21 atmospheres for a time not more than about 300 minutes.

Claim 6 (currently amended) The method of claim 5, wherein the composite is held ~~held~~ at a temperature of about 825°C and at an oxygen partial pressure of about 0.075 atmospheres for not more than about 900 minutes during the initial heating step.

Claim 7 (currently amended) The method of claim 6, wherein the composite is held at a temperature of about 815°C and at an oxygen partial pressure of about 0.04 atmospheres for not more than about 200 minutes during the initial heating step.

Claim 8 (currently amended) The method of claim 7, wherein the composite is held at a temperature of about 825°C and at an oxygen partial presence of about 0.075 atmosphere for not more than about 1500 minutes during the initial heating step to produce a composite having a superconducting Bi-2223 phase present at about 85 volume percent.

Claim 9 (currently amended) The method of claim 8, wherein the non-superconducting second phases and the Bi-2212 superconducting phase are present not to exceed about 10 volume percent after the initial heating step.

Claim 10 (original) The method of claim 1, wherein the non-superconducting phases comprise at least one of CuO, $(Ca, Sr)_2CuO_3$ and $(Ca,Sr)_{14}Cu_{24}O_{41}$.

Claim 11 (currently amended) The method of claim 10, ~~and further comprising~~ wherein the initial heating step includes heating the non-superconducting phases at a plurality of discrete temperatures between 815°C and 835°C and at oxygen partial pressures from 0.04 to 0.21 atmospheres along the lower of the non-superconducting phase take-off-temperature and the Bi-2223 superconducting phase grain growth take-off temperature to vary the concentrations of CuO, $(Ca,Sr)_2CuO_3$ and $(Ca,Sr)_{14}Cu_{24}O_{41}$.

Claim 12 (currently amended) In a ~~A~~ method for producing a Pb doped Bi-2223 superconductor including multiple heating steps, the improvement comprising reducing the concentration and particle size of non-superconducting phases produced during the initial heat treatment of Pb doped Ag/Bi-2223 composites, comprising providing a Pb doped Ag/Bi-2223 composite having Bi-2223 and Bi-2212 superconducting phases by, heating the composite in an atmosphere having an oxygen partial pressure in the range of from about 0.04 to about 0.21 atmospheres, and maintaining the temperature at or below a non-superconducting phase take-off temperature when the oxygen partial pressure is less than or equal to the crossover point or at or above the Bi-2223 grain growth take-off temperature but not greater than the non-superconducting take-off temperature when the oxygen partial is greater than the crossover point for a time sufficient to produce not less than about 80 volume percent Pb doped Ag/Bi-2223 phase and not greater than about 20 volume percent

non-superconducting phases, and thereafter continuing treatment of the superconducting material to produce a final product, wherein the composite is sequentially heated to 825°C at an oxygen partial pressure of 0.075 atmosphere and maintained thereat for a time less than about 300 minutes and thereafter maintained at temperatures at or below a non-superconducting phase take-off temperature when the oxygen partial pressure is less than or equal to the cross-over point or at or above the Bi-2223 grain growth take-off temperature but not greater than the non-superconducting take-off temperature when the oxygen partial pressure is greater than the cross-over point and both above and below oxygen partial pressure of 0.075 atmospheres, whereby to reduce the size of the longest dimension of the average non-superconducting particle to less than about two microns.

Claim 13 (currently amended) In a ~~A~~ method for producing a Pb doped Bi-2223 superconductor including multiple heating steps, the improvement comprising reducing the concentration and particle size of non-superconducting phases including CuO, $(CaSr)_2CuO_3$ and $(Ca,Sr)_{14}$ $Cu_{24}O_{41}$ during the initial heat treatment of Pb doped Ag/Bi-2223 composites, by providing a Pb doped Ag/Bi-2223 composite having Bi-2223 and Bi-2212 superconducting phases, heating the composite in an atmosphere having an oxygen partial pressure in the range of from about 0.04 to about 0.21 atmospheres, and maintaining the temperature below a non-superconducting phase take-off temperature and at or above the Bi-2223 grain growth take-off temperature for a time sufficient to produce not less than about 80 percent conversion to Pb doped Ag/Bi-2223 phase and not greater than about 20 volume percent non-superconducting

phase, heating the non-superconducting phase at a plurality of discrete temperatures between 815°C and 835°C and at oxygen partial pressures from 0.04 to 0.21 atmospheres along the lower of a non-superconducting phase take-off-temperature and the Bi-2223 superconducting phase grain growth take-off temperature to vary the concentration of CuO and $(Ca,Sr)_2CuO_3$ and $(Ca,Sr)_{14}$ $Cu_{24}O_{41}$, and thereafter maintaining the composite at temperature of about 825°C at about 0.075 atmospheres oxygen partial pressure for a time sufficient to reduce the concentration of the $(Ca,Sr)_{14}Cu_{24}O_{41}$ phase and to reduce the longest dimension of the average non-superconducting particle size to less than about two microns, and thereafter continuing treatment of the superconducting material to produce a final product.

Claim 14 (currently amended) A product produced ~~by~~ in the method for producing a Pb doped Bi-2223 superconductor including multiple heating steps, the improvement comprising reducing the concentration of non-superconducting phases during the initial heat treatment of Pb doped Ag/Bi-2223 composites having Bi-2223 and Bi-2212 superconducting phases, by ~~comprising~~ providing a Pb doped Ag/Bi-2223 composite having Bi-2223 and Bi-2212 superconducting phases, heating the composite in an atmosphere having an oxygen partial pressure not less than about 0.04 atmospheres, ~~and~~ maintaining the temperature at the lower of a non-superconducting phase take-off temperature and the Bi-2223 superconducting phase grain growth take-off temperature, ~~and~~ varying the oxygen partial pressure and/or the temperature between about 815°C and about 835°C to produce not less than about

80 percent conversion to Pb doped Bi-2223 superconducting phase and not greater than about 20 volume percent non-superconducting phases and thereafter continuing treatment of the superconducting material to produce a final product.